body **13** is held so that its upper end is flush with the surface of the top plate **122** and that its lower end projects downward from the hole portion **121***a* by a predetermined distance. Further, when a pushup force acts on the lower end of the pin main body **13***a* (this will be described later in detail), the flange portion **13***b* is moved until it contacts against the bottom surface of the top plate **122**. Then, the upper end of the pin main body **13***a* projects from the top plate **122** by a predetermined dimension.

[**0032**] A large number of partitioning walls **14***a* are arranged in juxtaposition along the width direction of the unit substrate **11**. The adjacent partitioning walls **14***b* constitute a piezoelectric element piece holding section **14***b* (see **FIG. 4**). The piezoelectric element piece holding sections **14***b* correspond to the respective tactile pins **13** and are formed at 64 positions, i.e. 32 positions on each surface of the unit substrate **11**.

[**0033**] The partitioning walls **14***a* are formed to have a predetermined length along the height direction of the unit substrate **11**. A circular piezoelectric element piece support point section **14***c* is formed at the proximal end (fixed end) of each partitioning wall **14***a*. The partitioning wall **14** is tapered toward its leading end. In this case, the spacing between the adjacent piezoelectric element piece support point sections **14***c* is small enough to sandwich a node portion (support point) of the piezoelectric element piece **15** for a bending operation, described later.

[**0034**] The piezoelectric element piece holding section **14***b* holds the piezoelectric element piece **15**. As shown in **FIGS. 5A and 5B**, the piezoelectric element piece **15** is of a bimorph type in which a thin piece **15***c* of an elastic conductive material such as a nickel alloy is interposed between piezoelectric layers **15***a* and **15***b* composed of a piezoelectric material, for example, PZT. Further, with 200 V applied to one **15***a* of the piezoelectric layers of a proximal end **151** and with the other piezoelectric layer **15***b* and the thin piece **15***c* grounded as shown in **FIG. 5A**, the piezoelectric element piece **15** is bent when 200 V is applied to the piezoelectric layer **15***a* and the thin piece **15***c* as shown in **FIG. 5B**.

[**0035**] The piezoelectric element piece **15** is arranged so that its node portion (support portion) for a being operation is sandwiched between the piezoelectric element piece support point sections **14***c* of the piezoelectric element piece holding sections **14***b*. In this case, a free end **152** of each piezoelectric element piece **15** is located in the space formed between the tapered leading ends of the partitioning walls **14***a*.

[**0036**] A pushup cam **16** is provided between the free end **152** of each piezoelectric element piece **15** and the corresponding tactile pin **13**. Each pushup cam **16** has its central portion supported by a pivot shaft **17** so as to be pivotable, as shown in **FIG. 4**. The pushup cam **16** is provided with a first action piece **16***a* that contacts against the free end **152** of the corresponding piezoelectric element piece **15** and a second action piece **16***b* having a placement surface **16***b***1** on which the lower end of the corresponding tactile pin **13** is placed. In this case, the pushup cam **16** is formed to have a large angle (obtuse angle) between the first action piece **16***a* and the placement surface **16***b***1** of the second action piece **16***b*. Thus, when the free end **152** of the bent piezoelectric element piece **15** pushes the first action piece **16***a* from the lateral direction, the pushup cam **16** is pivoted around the pivot shaft **17**. Then, the tactile pin **13** placed on the second action piece **16***b* is pushed up until the flange portion **13***b* of the pin main body **13***a* contacts against the bottom surface of the top plate **122**.

[**0037**] Specifically, the angle between the first action piece **16***a* of the pushup cam **16** and the placement surface **16***b***1** of the second action piece **16***b*, on which the lower end of the tactile pin **13** is placed, is about 140°. While the first action piece **16***a* is not pushed by the free end **152** of the piezoelectric element piece **15**, the angle between the placement surface **16***b***1** of the second action piece **16***b* and the horizontal direction is about 30°. After the free end **152** of the piezoelectric element piece **15** has pushed the first action piece **16***a* to push up the corresponding tactile pin **13** until its flange portion **13***b* contacts against the bottom surface of the top plate **122**, the angle between the placement surface **16***b***1** of the second action piece **16***b* and the horizontal direction is about 45°.

[**0038**] That is, the pushup cam **16** is formed to have such a large angle (obtuse angle) between the first action piece **16***a* and the second action piece **16***b* that the pushup cam **16** can be slightly bent. Thus, the tactile pin **13** is pushed up as a result of a small pivot angle associated with a bending operation of the corresponding piezoelectric element piece **15**. This enables a reduction in the space required to pivot each pushup cam **16**. Therefore, the spacing between the piezoelectric element pieces **15** and the tactile pins **13** can be reduced. This makes it possible to set a much smaller distance between the tactile pins **13**.

[**0039**] For example, with the conventional pushup cam, the distance between the tactile pins is about 3 mm at minimum. However, with the present embodiment, the distance can be reduced down to about 2.4 mm.

[**0040**] A printed circuit board **18** as wiring part is provided at the lower end of the unit substrate **11**.

[**0041**] The printed circuit board **18** is located so that its upper edge is close to the node portion of each piezoelectric element piece **15** for a bending operation, i.e. close to the piezoelectric element piece support point section **14***c* of the corresponding partitioning wall **14***a*. Furthermore, the printed circuit board **18** is located so that its lower edge if close to the proximal end **151** of the corresponding piezoelectric element piece **15**.

[**0042**] Terminals **18***a*, **18***b*, and **18***c* are formed on a surface of the printed circuit board **18** in association with the piezoelectric layers **15***a* and **15***b* and thin piece **15***c*, respectively, at the proximal end **151** of each piezoelectric element piece **15**. Leads **19***a* and **19***b* are used to connect the piezoelectric layers **15***a* and **15***b* to the terminals **18***a* and **18***b*, respectively. Further, the thin piece **15***c* is connected directly to the terminal **18***c*. Printed wiring is provided on the back surface of the printed circuit board **18** and has an electric circuit used to guide the terminals **18***a*, **18***b*, and **18***c* to a drive circuit board **20**, described later.

[**0043**] A drive circuit board **20** is provided at the side of the unit substrate **11**. A drive IC **21** is provided in the middle of the drive circuit board **20**. The drive IC **21** determines those of the piezoelectric element pieces **15** which are to be driven, on the basis of data transmitted by a computer (not shown) and corresponding to graphical information. The